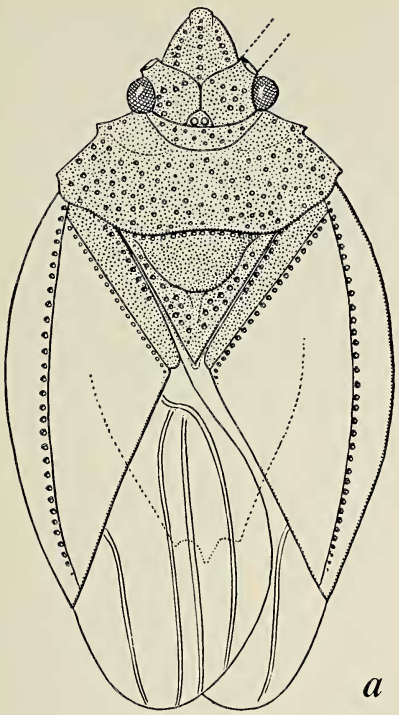
A New Subfamily of Urostylidae from Borneo (Hemiptera: Heteroptera)

W. E. China and James A. Slater[1]

Through the kindness of Dr. R. I. Sailer of the United States National Museum we recently have had the opportunity to study a very remarkable insect from Borneo. With some hesitation we place this insect in the pentatomoid family Urostylidae as a new subfamily, although the differences between this new species and previously known urostylids are of considerable magnitude.

The systematic position of this curious insect is of considerable interest. The presence of ventral abdominal trichobothria places *Saileriola* in the Trichophora of Tullgren (1918). Although trichobothria are absent in some Pentatomorpha (Leston, Pendergrast and Southwood, 1954) such as the lygaeid genus *Oxycarenus* and the plataspid *Lestonia*, so far as is known no cimicomorphs possess trichobothria. Likewise the presence of arolia and pseudoarolia precludes many cimicoid groups. Once the position of the species in the trichophora is established, one is faced primarily with the problem of pentatomoid or lygaeoid affinities. The apparently five-segmented antenna is of course pentatomoid, although certainly not definitive; some pentatomoids possess four- and even three-segmented antennae, and five-segmented antennae are known to occur in such dissimilar families as the Hebridae and Nabidae. So far as we know, however, five-segmented antennae are unknown in the Lygaeidae whereas they do represent the predominant condition in the Pentatomoidea. The lack of a claval commissure (Fig. 1*a*) is rather characteristic of Pentatomoidea, whereas the condition occurs only rarely in the Lygaeidae (i.e. *Geocoris* and *Chauliops*). The partial fusion of the ventral abdominal segments (Fig. 1*b*) is reminiscent of some Lygaeidae (many Rhyparochrominae, Pamphantinae, *Artemidorus*, etc.), but similar fusion occurs in the Pentatomoidea (*Lestonia*, for example). The peltoid head shape and widely separated coxae are typical pentatomoid characters. In Lygaeidae the coxae are usually closely approximated, although widely separated at times as in some Blissinae such as *Bochrus*. The aedeagus in *Saileriola* closely resembles the pentatomoids rather than the Lygaeidae. The vesica is short with definite conjunctival appendages. The long fine spiral vesica found in the majority of Lygaeidae (but not in the Pachygronthinae and Heterogastrinae) is definitely lacking. The venation of the hind wing (Fig. 2*e*) is unlike either group, having obviously undergone extreme reduction with the loss of the hamus, distal portion of the cubitus, intervannals, vannals, and jugal veins (terminology follows Leston, 1953).

[1] Department of Entomology, British Museum of Natural History, London, and Department of Zoology and Entomology, University of Connecticut, Storrs, Connecticut. Manuscript received November 28, 1955.



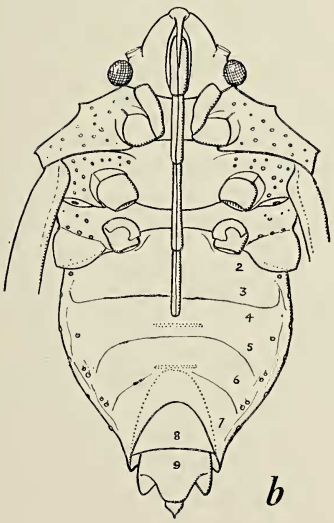


Fig. 1. *Saileriola sandakanensis* n. sp.: *a*, Dorsal aspect of body; *b*, ventral aspect of body showing spiracles and trichobothria, dorsal nymphal scent gland scars shown by dotted lines.

It would appear from the rather general characters mentioned above that we are dealing with a rather anomalous pentatomoid. There is some further evidence to support this viewpoint and also to indicate that the affinities of *Saileriola* are with the Pentatomoidea.

In a number of important features *Saileriola* shows relationship to the Urostylidae, in which family we place it for the present. This family must represent the Proto-Trichophora at the base of the Pentatomidae, Coreidae, and Lygaeidae. *Saileriola* resembles the Urostylidae very closely in the structure of the pygophore (Fig. 3*a*) (see Yang, 1938), the elongate eighth segment of the male, the simple legs, the venation of the hemelytral membrane, the regular punctures of the corium and clavus (also true of many Lygaeidae), and, a feature that we consider of great importance, the position and shape of the area of antennal insertion (Fig. 2*a*). This latter feature has often been used to separate the Coreidae from the Pentatomidae and Lygaeidae. In *Saileriola* this area is more or less dorsal, i.e., placed slightly above the middle line of the eye, as in the Coreidae. However, in the primitive pentatomoid family Urostylidae the insertion of the antennae is exactly as it is in *Saileriola* and the wide annulate antenniferous tubercles are identical. In the genus *Urostylis* the ocelli are placed close together as they are in *Saileriola*. The peltoid head, trochalopodous coxae, pseudarolia, and number and position of the nymphal scent gland scars also indicate a urostylid relationship. Furthermore, in some urostylids an obsolete vertex suture is present as in *Saileriola*, although this may represent a neotinic feature rather than be of phylogenetic importance.

Saileriola does have important features not found in other urostylids and differs from them mainly by virtue of the structure of the metathoracic scent gland peritreme, number and position of trichobothria, position of the spiracles, venation of the hind wing and some structural aspects, and relative size of the

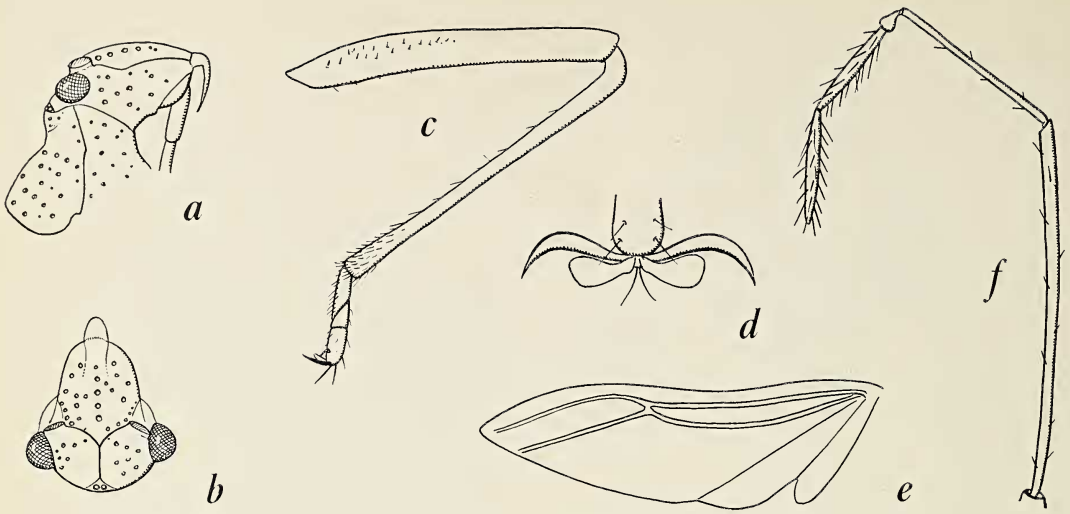


FIG. 2. *Saileriola sandakanensis* n. sp.: *a*, Lateral aspect of head and pronotum; *b*, cephalic aspect of head; *c*, metathoracic leg; *d*, apical portion of tarsus showing claws, arolia, and pseudarolia; *e*, hind wing; *f*, antenna.

pygophore and aedeagus. The extremely small size of the insect is not approached by any of the previously known Urostylidae.

SAILERIOLINAE, new subfamily

Vertex sutures present; antennae five segmented, first segment extending considerably beyond apex of head, longer than length of head and pronotum combined, curving slightly outward, third segment very short, subglobular; antenniferous tubercles exerted and visible dorsally; ocelli present and nearly contiguous on mid-line; bucculae short, about one-half length of head; rostrum attaining fourth abdominal sternite; lateral pronotal margins reflexed; spiracles lateral (except ventral on segment two); venation of hind wing reduced to radius, portion of medius and basal portion of cubitus; lateral trichobothria present on fourth, fifth and sixth abdominal segments, the latter two segments with a pair of trichobothria the former with a single one.

Type genus: *Saileriola*, new genus.

SAILERIOLA, new genus

Head strongly deflexed, antennae arising laterodorsad, slightly above median lateral line through eyes, antenniferous tubercles annuliform more or less semicircular; labium four segmented; cuneus and claval commissure absent; meso- and metasternum noncomposite; abdomen with six pairs of spiracles; coxae trochalopodous; no prosternal stridulatory sulcus; median trichobothria absent; two linear dorsal scent gland scars present between tergites four and five and five and six; tarsi three segmented, claws apical, pseudoarolia present.

Type species: *Saileriola sandakanensis*, new species.

This new genus will run to *Urostylis* in Yang's (1939) key to the urostylid genera, but is abundantly distinct as discussed above.

Saileriola sandakanensis, new species

Head, thorax, scutellum, clavus, and coarse punctures on corium adjacent to claval suture and along inner margin of embolium bright mahogany brown; corium and membrane hyaline; body coarsely punctured as follows: head, thorax, scutellum basally and laterally, median basal portion of clavus, a single series on corium along claval suture and a second series running through corium just lateral of

embolium (R + M); entire body nearly glabrous throughout.

Head with clypeus distinctly longer than jugae, vertex with a median suture that becomes bifid and proceeds to lateral margins just anterior to antenniferous tubercles; ocelli nearly contiguous, near base of head on meson, area of head basad of the suture "arms" strongly convex, eyes contiguous with anterolateral pronotal angles, bucculae moderately elevated, labium elongate reaching middle of abdomen, first segment barely attaining base of head, third segment reaching apices of metacoxae, length of head 0.80 mm. (maximum), 0.50 mm. (dorsal view), width across eyes 0.78 mm., interocular space 0.48 mm.; pronotum strongly transverse, anteriorly with broad collar-like area with large, smooth impunctate callus on either side, lateral margins bearing a distinct tooth, small tooth present at humeral angles, margins somewhat flanged and recurved dorsad, posterior margin sinuate, length of pronotum 0.50 mm., maximum pronotal width 1.43 mm.; scutellum large, triangular, reaching apex of clavus, basal half strongly swollen, smooth and shining, laterally and on terminal half flat with a short obscure median carina that does not reach apex, length scutellum 0.62 mm.; meso- and metasterna lacking either a carina or sulcus, metasternal scent gland openings placed at anterior margin of metapleuron, evaporating area simple and relatively undifferentiated; hemelytra extending far beyond apex of abdomen, corium semihyaline, membrane with four longitudinal veins and no basal cell, the middle two arising from base of inner (cubital) vein, distance from apex of clavus to apex of corium 1.02 mm., distance from apex of corium to apex of membrane 0.50 mm.; hind wing with venation markedly reduced, hamus, antevannal, intervannals, vannals and jugal absent leaving an elongate basal cell formed by R + M anteriorly and Cu posteriorly and a pair of veins, R and M, proceeding distally from the R + M fusion area, vannal fold single; abdominal segments showing marked fusion with distinct sutures visible only between segments three and four, five and six, and six and seven, none of the sutures apparently completely reaching the lateral abdominal margin; no distinct connexival sutures; eighth abdominal segment considerably longer than wide, entirely telescoped into segment seven; pygophore (9th) large, longer than wide with two tooth-like prominences on the relatively small genital atrium, each tooth bearing tuft of mesally directed bristles, small tooth between base of larger tooth and pygophore opening; parameres elongate, slender, linear, with apex slightly clubbed; anal segment (proctiger) semicircular, fringed with short bristles; posterior margin of pygophore above with acute triangular spatulate process; aedeagus typically pentatomoid with median sclerotized paravertical appendage, three pairs of conjunctival appendages and valviform theca; legs simple, mesothoracic and metathoracic coxae very widely separated, coxae very short, trochanters long, hind femora with scattered short, basally tuberculate bristles, tibiae feebly pubescent along under side, more densely so toward apex, first and third tarsal segments longer than segment two, claws widely divergent and narrowly acuminate, pseudoarolia large and flap-like, arolia bristle-like.

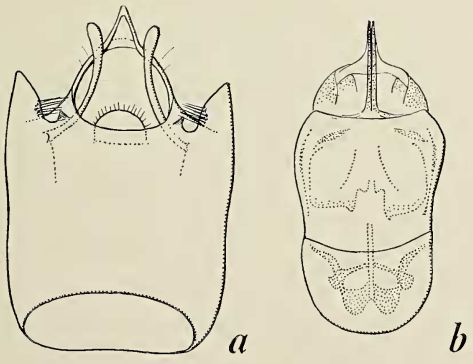


Fig. 3. *Saileriola sandakanensis* n. sp.: *a*, Ninth segment of abdomen of male, dorsal aspect; *b*, aedeagus.

HOLOTYPE: Male, Sandakan, Borneo (Baker). No. 63131 in United States National Museum.

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